

A new genus and species of Bythitidae (Teleostei: Ophidiiformes) from northwestern Australia

JØRGEN G. NIELSEN¹ and WERNER SCHWARZHANS²

¹Natural History Museum of Denmark, University of Copenhagen, Universitetsparken 15, DK-2100 Copenhagen Ø, DENMARK

jgnielsen@snm.ku.dk

²Ahrensburger Weg 103 D, 22359 Hamburg, GERMANY

wwschwarz@aol.com

ABSTRACT

A new genus and species of bathyal bythitid fish (Teleostei: Ophidiiformes) is described based on a single specimen caught at a depth of 392 m in the Timor Sea off the coast of northwestern Australia. *Timorichthys disjunctus* gen. nov., sp. nov. differs from all other bythitid genera by the position of the anus midway between the tip of the snout and origin of the anal fin. The joined vertical fins and the type of intromittant organ furthermore place the new genus in the subfamily Bythitinae.

KEYWORDS: Bythitidae, *Timorichthys disjunctus* gen. nov., sp. nov., viviparous brotula, taxonomy, northwestern Australia.

INTRODUCTION

The intensive bottom trawling off northwestern Australia by the Research Vessel *Southern Surveyor* in 2007 revealed a number of new and rare ophidiiform fishes (Nielsen 2010, 2011). The present paper deals with one 39 mm SL adult male trawled at a depth of 392 m. At first it did not seem similar to any family known from the area. However, the ratio of the number of dorsal and anal pterygiophores to the number of adjacent vertebrae being more than one, the joined vertical fins, the single pelvic fin ray and the presence of a copulatory organ being an integrated part of the fleshy genital hood with the penis present as a small soft papilla without pseudoclaspers place the specimen in the subfamily Bythitinae of the viviparous family Bythitidae, order Ophidiiformes (Nielsen *et al.* 1999).

The specimen is distinctly different from any of the 15 genera presently referred to the Bythitinae first and foremost by the position of the anus midway between the snout and the anal fin origin, but also by the non-tapering body, the opercular spine being covered by skin and the head pore pattern. Consequently, a new genus and species are here described for it.

MATERIAL AND METHODS

The specimen is curated in Museum Victoria (NMV), according to the standards for museum collections Fricke & Eschmeyer (2011). Ichthyological terminology,

measurements and counts follow Nielsen *et al.* (1999); the terminology of the head pores and otoliths follows Schwarzhans *et al.* (2005).

SYSTEMATICS

Timorichthys gen. nov.

Type species, here designated, *Timorichthys disjunctus* sp. nov. Gender masculine.

Diagnosis. Differing from all other bythitid genera by position of anus halfway between tip of snout and origin of anal fin. Body non-tapering and compressed. Head short with blunt snout. Scales and lateral line absent. Vertical fins joined. Pectoral radials not prolonged. Mouth oblique, ending well behind eye. Weak opercular spine covered by skin. Anterior nostril close to upper lip, ending in distinct tube. Palatines with few, small teeth. Few, large head pores: 3 anterior infraorbital pores, a pair of anterior mandibular pores at lower jaw symphysis and 1 posterior mandibular pore behind termination of maxilla. Otolith with small, undivided, centrally placed sulcus. Rays in dorsal fin 74, anal fin 46, pectoral fin 11 or 12. Vertebrae 16+36. Anterior gill arch with 6 long rakers.

Remarks. The combination of the position of the anus, the hidden opercular spine, the head pores, and the form of the body is so unique that *Timorichthys* does not resemble any other bythitid genus.

Etymology. The generic name refers to the Timor Sea, from which the holotype originated.



Fig. 1. *Timorichthys disjunctus* Holotype, NMV A29734-002, 39 mm SL. Photograph: Markus Krag.

Timorichthys disjunctus sp. nov.

(Figs 1–3)

Material examined. HOLOTYPE – NMV A29734-002, 39 mm SL, male, eastern Indian Ocean, Timor Sea, off northwestern Australia, approx. 78 km south of Cartier Island, Kulumbu L29 transect, 13°13'29"S, 123°23'44"E to 13°13'20"S, 123°23'17"E, R.V. *Southern Surveyor*, Sherman sled, 392 m, 5 July 2007.

Diagnosis. See generic diagnosis above.

Description (Figs 1–3).

Meristic characters. Rays in dorsal fin 74, caudal fin 11–12, anal fin 46, pectoral fin 11 or 12, pelvic fin 1. Vertebrae 16+36=52. Pseudobranchial filaments 2. Anterior gill arch with 6 long rakers. Origin of dorsal fin above vertebra no. 9, origin of anal fin below vertebra no. 24 and dorsal fin ray no. 28. Anus placed below dorsal fin ray no. 3.

Morphometric characters (in % SL). Head 18.5, depth at origin of anal fin 9.7, depth at origin of dorsal fin 11.0, upper jaw 7.7, depth of posterior maxilla 2.3, orbit 1.3, eye ball 0.6, interorbital 3.8, snout 3.6, postorbital 13.5, preanal

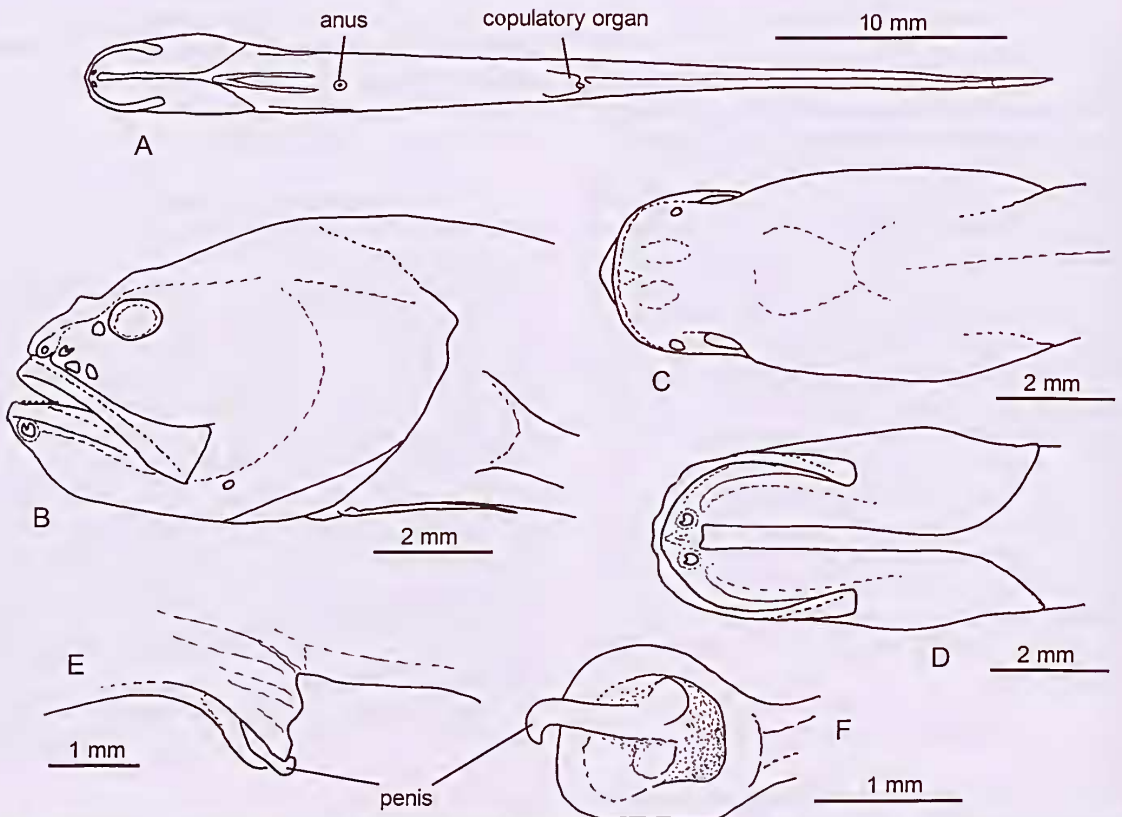


Fig. 2. *Timorichthys disjunctus* Holotype: A, Ventral view of fish; B, lateral view of head; C, dorsal view of head; D, ventral view of head; E, lateral view of male copulatory organ; F, ventral view of male copulatory organ.

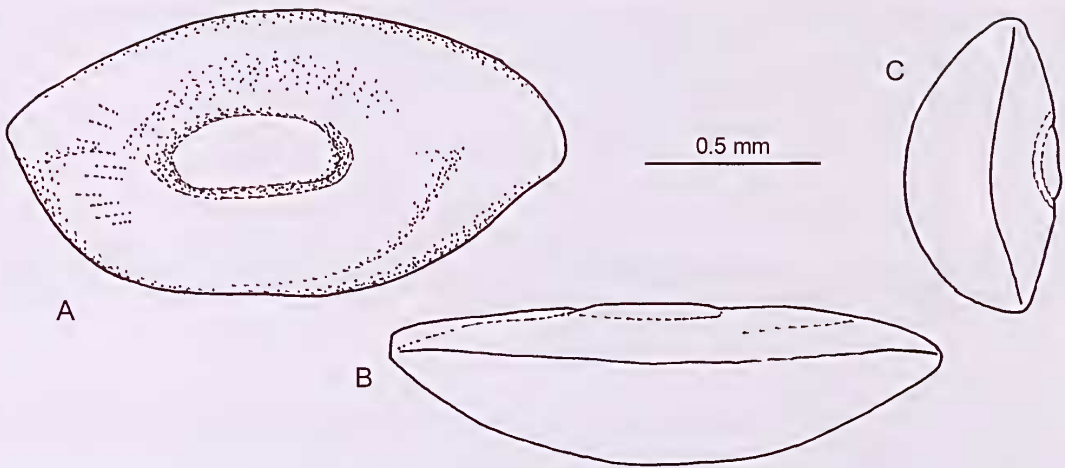


Fig. 3. *Timorichthys disjunctus* Holotype, right otolith. A, median view; B, ventral view; C, frontal view.

52, anus to origin of anal fin 26.5, predorsal 24.5, base of pelvic fins to origin of anal fin 37.0.

Head and body naked. Body non-tapering and compressed (Fig. 1). No lateral line. Head high with blunt snout. Vertical fins joined. Dorsal fin origin above anterior half of pectoral fin. Anal fin origin near midpoint of fish. Pectoral fin below midline of fish with peduncle almost as broad as long. Pelvic fins below opercle, almost reaching anus. Anus midway between snout and origin of anal fin (Fig. 2 A). Mouth oblique with upper jaw ending well behind eye. Posterior end of maxilla vertically expanded. Snout twice as long as eye diameter. Anterior nostril close to upper lip ending in a tube; posterior nostril a mere hole close to eye (Fig. 2 B). Opercular spine weak and covered by skin. No spine on preopercle. Anterior gill arch with 2 small knobs on upper branch, 1 long raker in angle and lower branch with 5 long rakers followed by 8 small knobs. All knobs and long rakers with small, densely placed spines. Long rakers almost twice as long as gill filaments; 2 pseudobranchial filaments.

Axial skeleton (from radiographs). Number of precaudal vertebrae 16. Anterior neural spine one-third length of second spine. All neural and haemal spines with pointed tips. Neural spines 2–10 decreasing in length and no. 11–16 slightly increasing in length. Precaudal vertebrae 3–8 with depressed tips, no. 4–16 with enlarged basal parts and no. 7–16 with rather short neural spine. Parapophyses developed on vertebrae 7–16. Pleural ribs observed on vertebrae 3–7. Epipleural ribs not observed, but they may be too thin to show up on radiographs.

Dentition. Palatines with very few and small teeth in 1 row. Vomer boomerang formed with few, small teeth in 1 row. Premaxilla with 2 or 3 rows of small teeth near symphysis, decreasing to one row posteriorad. Dentary with 3 or 4 rows of small teeth near symphysis, decreasing to 1 row posteriorad.

Head pores (Fig. 2 B–D). Three anterior infraorbital pores forming dense pattern close to upper lip in front of eye; infraorbital pores large, about size of posterior nostril. One anterior mandibular pore at tip of lower jaw corresponding to first anterior mandibular pore in terminology of Schwarzhans *et al.* (2005); anterior mandibular pore large, with papilla at anterior rim. One moderately large posterior mandibular pore behind termination of maxilla corresponding to third posterior mandibular pore in terminology of Schwarzhans *et al.* (2005).

Otolith (Fig. 3 A–C). Small, elongate, with length to height ratio of 2.0 and height to thickness ratio of 1.8. Anterior and posterior tips nearly symmetrical, pointed, slightly shifted dorsally. Dorsal and ventral rims gently curved without prominent angles. Inner face nearly flat with central, small, oval, undivided sulcus with single shallow colliculum. Otolith length to colliculum length = 3.5; colliculum length to height = 2.2. Dorsal depression and ventral furrow feeble. Outer face distinctly convex, smooth.

Male copulatory organ (Fig. 2 E–F). Large, broad hood with free, small genital papilla inserted in proximal, ventral position.

Colour. Head and body brown with numerous, tiny, black spots most dense on snout, cheek and jaws. Eye bluish with greenish lens.

Biology. Viviparous species, living near to, or on, the bottom on the deep northwestern Australian Plateau.

Distribution. Only known from the holotype trawled at 392 m off northwestern Australia.

Etymology. From *disjunctus* (Latin) = separated, distant, referring to the position of the anus midway between the tip of the snout and the origin of the anal fin. The name is adjectival.

ACKNOWLEDGEMENTS

We are grateful to Martin Gomon and Dianne Bray (NMV) who let us borrow this interesting fish. Ronald Fricke (SMNS) is thanked for his careful review of the manuscript.

REFERENCES

- Fricke, R. & Eschmeyer, W.N. 2011. A guide to fish collections in the Catalog of fishes. Online version, updated 14 July 2011. – Internet publication, San Francisco (California Academy of Sciences). <http://research.calacademy.org/research/Ichthyology/Catalog/collections.asp>
- Nielsen, J.G. 2010. Revision of the bathyal fish genus *Benthocometes* (Teleostei: Ophidiidae) with a new species from off NW Australia. *Zootaxa* **2561**: 59–68.
- Nielsen, J.G. 2011. Revision of the bathyal fish genus *Pseudonus* (Teleostei, Bythitidae); *P. squamiceps* a senior synonym of *P. platycephalus*, new to Australian waters. *Zootaxa* **2867**: 59–66.
- Nielsen, J.G., Cohen, D.M., Markle, D.F. & Robins, C.R. 1999. Ophidiiform fishes of the world (Order Ophidiiformes). FAO species catalogue, Volume 18. *FAO Fisheries Synopsis* **125**, v. 18: I–XI + 1–178.
- Schwarzhans, W., Möller, P.R. & Nielsen, J.G. 2005. Review of the Dinematchthyini (Teleostei: Bythitidae) of the Indo-west Pacific. Part I. *Diancistrus* and two new genera with 26 new species. *The Beagle. Records of the Museums and Art Galleries of the Northern Territory* **21**: 73–163.

Accepted 20 October 2011